Outdoor Sensor Humidity, Temperature active with weather shield

Active sensor (4...20 mA) for measuring the relative or absolute humidity and temperature in outdoor areas. Instead of the humidity signal, the enthalpy or the dewpoint can be selected as an output signal. IP65 / NEMA 4X rated enclosure.

5 YEAR WARRANTY

Type Overview

Type	Output signal active temperature	Output signal active humidity
22UTH-53	4...20 mA	4...20 mA

Technical Data

Electrical data	Nominal voltage	DC 24 V
	Nominal voltage range	DC 13.5...26.4 V
	Power consumption DC	0.5 W
	Electrical connection	Removable spring loaded terminal block max. 2.5 mm²
	Cable entry	Cable gland with strain relief Ø6...8 mm (1/2" NPT conduit adapter included)
Functional data	Sensor Technology	Polymer capacitive sensor with stainless steel wire mesh filter
	Multirange	4 measuring ranges selectable
	Output signal active note	Current output: max. 500 Ω load
	Application	Air

Measuring data	Measuring values	Temperature Relative humidity Dew point Enthalpies Absolute humidity
	Measuring range humidity	0...100% r.H. non-condensing
	Measuring range temperature	Active sensor: range selectable Attention: max. measuring temperature is restricted by max. fluid temperature (see Safety data)

Setting	range [°C]	range [°F]	Factory setting
S0	-40...60	-40...160	
S1	0...50	40...140	
S2	-15...35	0...100	
S3	-20...80	0...200	✔

	Measuring range absolute humidity	adjustable at the transducer: 0...50 g/m³ (default setting) 0...80 g/m³
	Measuring range enthalpy	0...85 kJ/kg
	Measuring range dew point	adjustable at the transducer: 0...50°C (default setting) -20...80°C
	Accuracy humidity	±2% between 10...90% r.H. @ 21°C
	Accuracy temperature active	±0.5°C @ 21°C [±0.9°F @ 70°F]
Materials	Cable gland	PA6, black
	Housing	Cover: Lexan, grey Bottom: Lexan, grey Seal: 0467 NBR70, black UV resistant
Safety data	Ambient humidity	Short-term condensation permitted
	Fluid humidity	Short-term condensation permitted
	Ambient temperature	-35...50°C [-30...120°F]
	Fluid temperature	-35...50°C [-30...120°F]
	Protection class IEC/EN	III Safety Extra-Low Voltage (SELV)
	Protection class UL	UL Class 2 Supply
	EU Conformity	CE Marking
	Certification IEC/EN	IEC/EN 60730-1
	Certification UL	cULus acc. to UL60730-1A/-2-9/-2-13, CAN/CSA E60730-1:02/-2-9
	Degree of protection IEC/EN	IP65
	Degree of protection NEMA/UL	NEMA 4X
	Quality Standard	ISO 9001

Safety notes

This device has been designed for use in stationary heating, ventilation and air-conditioning systems and must not be used outside the specified field of application. Unauthorised modifications are prohibited. The product must not be used in relation with any equipment that in case of a failure may threaten humans, animals or assets.
Ensure all power is disconnected before installing. Do not connect to live/operating equipment.

Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.

The device contains electrical and electronic components and must not be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Remarks

General remarks concerning sensors

When using lengthy connection wires (depending on the cross section used) the measuring result might be falsified due to a voltage drop at the common GND-wire (caused by the voltage current and the line resistance). In this case, 2 GND-wires must be wired to the sensor - one for supply voltage and one for the measuring current.

Sensing devices with a transducer should always be operated in the middle of the measuring range to avoid deviations at the measuring end points. The ambient temperature of transducer electronics should be kept constant. The transducers must be operated at a constant supply voltage (±0.2 V). When switching the supply voltage on/off, onsite power surges must be avoided.

Build-up of Self-Heating by Electrical Dissipative Power

Temperature sensors with electronic components always have a dissipative power which affects the temperature measurement of the ambient air. The dissipation in active temperature sensors shows a linear increase with rising operating voltage. The dissipative power should be taken into account when measuring temperature. In case of a fixed operating voltage (±0.2 V) this is normally done by adding or reducing a constant offset value. As Belimo transducers work with a variable operating voltage, only one operating voltage can be taken into consideration, for reasons of production engineering. Transducers 0.5...10 V / 4...20 mA have a standard setting at an operating voltage of DC 24 V. That means, that at this voltage, the expected measuring error of the output signal will be the least. For other operating voltages, the offset error will be increased by a changing power loss of the sensor electronics. If a re-calibration should become necessary later directly on the sensor, this can be done by means of a trimming potentiometer on the sensor board.

Application Notice for Humidity Sensors

Refrain from touching the sensitive humidity sensor element. Touching the sensitive surface will void warranty.

For standard environmental conditions the manufacturing accuracy specified in the datasheet will be guaranteed for two years. When exposed to harsh environmental conditions such as high ambient temperature and/or high levels of humidity, or presence of aggressive gases (i.e. chlorine, ozone, ammonia) the sensor element may be affected and readings may be outside specified accuracy. Replacement of deteriorated humidity sensors due to harsh environmental conditions are not subject of the general warranty.

The sensor shows best performance when operated within recommended normal temperature range of 5...60°C and humidity range of 20...80% r.H. Long-term exposure to conditions outside normal range, especially at high humidity, may temporarily offset the humidity signal (e.g. +3% r.H. after 60h kept at >80% r.H.). After returning into the normal temperature and humidity range the sensor will slowly come back to calibration state by itself.

Scope of delivery

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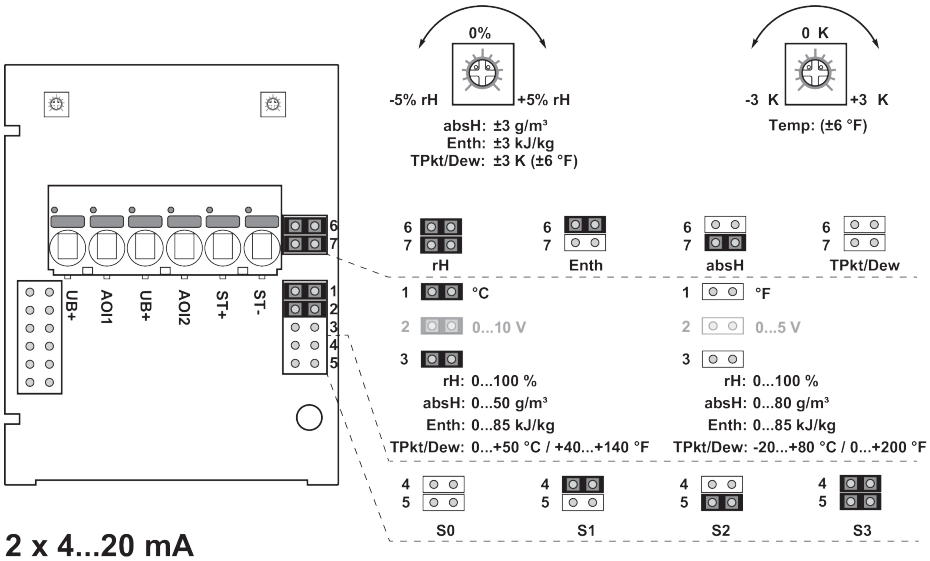
Description	Type
Mounting plate L housing	A-22D-A10
Rain cover, for 22UTH-..	A-22U-A01
Dowel	
Screws	
1/2" NPT conduit adapter	

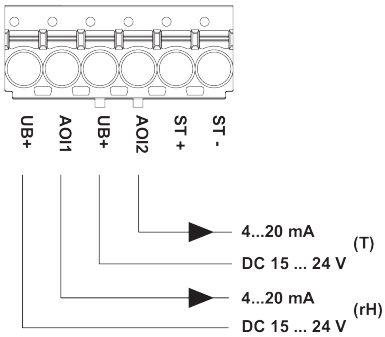
Accessories

Optional accessories	Description	Type
	Replacement filter, wire mesh, Stainless steel	A-22D-A06

Wiring diagram



2 x 4...20 mA



rH Relative humidity
absH Absolute humidity
EntH Enthalpy
TPkt/Dew Dew point
(Measurement value available on Output AOI1)

Connectors ST+ / ST- are only used for sensor types which additionally have a passive resistance sensor element for temperature measurement.
Correct temperature values are only available, when the humidity output AOI1 and both inputs UB + are connected.
The adjustment of the measuring ranges is made by changing the bonding jumpers.
The output value in the new measuring range is available after 2 seconds.

Setting	range [°C]	range [°F]	Factory setting
S0	-40...60	-40...160	
S1	0...50	40...140	
S2	-15...35	0...100	
S3	-20...80	0...200	✔

Dimensions

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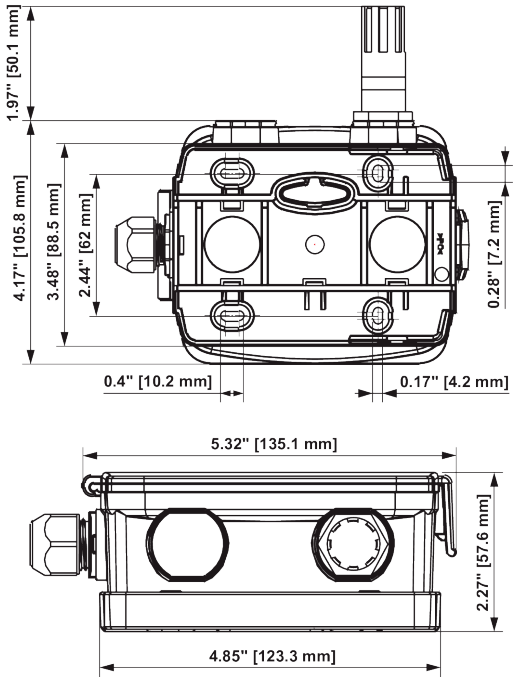

Type	Weight
22UTH-53	0.28 kg